

quent, and the surface air greatly cleared. Consequently fog decreased rapidly from August along the steamship routes, but increased in Alaskan waters, where reports indicate a far greater prevalence than usual. Fog continued relatively frequent along our western coast.

The following table shows the atmospheric pressures for several island and coast stations for September. It will be observed that a rather abnormal gradient existed between Juneau, with a plus pressure departure of 0.17 inch, and Tatoosh Island, with a minus departure of 0.03 inch.

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
Dutch Harbor <sup>1</sup>	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
St. Paul <sup>1</sup>	29.84	+0.14	30.26	8th.	29.98	18th
Kodiak <sup>1</sup>	29.97	+0.27	30.42	24th	29.18	20th
Midway Island <sup>1</sup>	29.96	-0.11	30.08	18th	29.82	9th
Honolulu <sup>1</sup>	29.97	-0.08	30.07	16th	29.84	9th
Juneau <sup>1</sup>	30.07	+0.17	30.38	28th	29.60	14th
Tatoosh Island <sup>1</sup>	29.98	-0.03	30.19	30th	29.49	16th
San Francisco <sup>1</sup>	29.93	-0.01	30.21	29th	29.76	16th
San Diego <sup>1</sup>	29.88	0.00	30.04	7th	29.71	14th

<sup>1</sup> P. m. observations only.

<sup>2</sup> Data insufficient.

<sup>3</sup> 25 days.

<sup>4</sup> And other dates.

<sup>5</sup> 26 days.

<sup>6</sup> 27 days.

<sup>7</sup> A. m. and p. m. observations.

<sup>8</sup> Corrected to 24-hour mean.

East winds continued to prevail at Honolulu, and kona winds occurred infrequently. The average velocity was 8.8 miles per hour; the maximum velocity, 30 miles NE. on the 29th. Rainfall continued to be less than the normal.

Tropical cyclones in both east and west longitudes were moderately frequent and of dangerous strength. The following article by the Rev. José Coronas, S. J., of the Manila Observatory, describes the movements of such typhoons as occurred in the Far East up to and including September 18. In addition to the steamers mentioned in that report as being heavily involved in the typhoon south of Korea on the 6th, a special report from the British steamer *Teucer* shows that this vessel experienced considerable difficulty in crossing the Yellow Sea from western Japan to the Yangtse River. The captain intended sailing along the northern edge of the storm on the 5th and thus cut ahead of the approaching center, favored by the fresh easterly winds. In the evening, however, he decided this could not be done, and the *Teucer* was headed S. 15° E. at 10 p. m. Throughout the 6th she steamed against the generally southerly winds, encountering gales of force 11, but escaping the storm center. At midnight of the 6th she was able to resume her course in winds that were rapidly hauling to SW. Press reports indicate considerable damage to life and property in Korea resulting from this storm.

A further press report speaks of an intense storm, accompanied by "the worst floods Japan has experienced in 50 years," which swept the Empire, especially the central districts, during the night of the 30th. Our maps show a considerable depression nearing southern Japan on the morning of the 30th, and near Tokyo 24 hours later. From the 28th to the 30th the American steamer *West Jena*, from Kobe, experienced the strong to hurricane winds of this typhoon, which delayed her within the area bounded by 31° to 34° N., 135° to 138° E. for more than 48 hours.

From the American Tropics come various reports of severe storms this month. On the 8th and 9th the American steamer *Mericos H. Whittier*, Iquique to San Pedro,

encountered a SSW. to SW. storm of exceptional violence for the region so far south, the vessel being in 4° 23' N., 92° 13' W. at 6 a. m. of the 8th. During that day heavy rain squalls, with winds sometimes attaining force 12, were experienced. The gales continued until the 9th, generally from the SW., lowest given pressure, 29.75 (uncorrected), at 6 a. m. of the 9th.

The *Mericos H. Whittier* again encountered SW. gales on the 12th. These continued until the afternoon of the 14th, but rose to force 11 at 4 p. m. of the 13th, pressure falling to 29.44 (uncorrected), at 6 a. m. of the 14th. Unfortunately the vessel did not record its positions during this storm, but from the dates given, taken in conjunction with its earlier and subsequent known positions, it must have experienced the same cyclone that was encountered by the American steamer *Betterton*, on the 14th, in 16° 09' N., 105° 30' W. The disturbance reported by the American steamer *Edgemoor* on the 13th, in 8° 05' N., 85° 15' W. (see table), seems hardly to have been identical with the previously mentioned storm of the same date, though further information may connect the two.

A shipping report from the American steamer *West Calera*, which left San Pedro on the 21st, bound for Sydney, Australia, states that this vessel, when 1,832 miles from the sailing port, on the 29th, encountered a severe hurricane. No further data concerning the storm are available at this writing.

**Waterspout.**—American steamer *Enterprise*, San Francisco toward Hilo: "September 13, 1925. In 35° 18' N., 128° 03' W., at 5.58 p. m., passed waterspout about 40 feet high traveling NE. 20 miles per hour."

#### DUST OVER INDIAN OCEAN

Reports of dust at sea come from the following vessels: American steamer *Egremont*, 13° 32' N., 43° E. (southern part of Red Sea); 7th: "Thick sand." American steamer *President Harrison*: "9th, at 9 p. m. When passing Aden 10 miles distant encountered a slight sandstorm, or at least for 30 minutes in cloud of dust. Very little breeze from off shore."—*W. E. H.*

#### THREE WELL-DEVELOPED TYPHOONS IN THE FAR EAST DURING SEPTEMBER 1 TO 18

By REV. JOSÉ CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

Our weather maps showed three well-developed typhoons in the Far East during the first half of the month. At the time we are writing this (Sept. 25) there is another big typhoon over 300 miles to the east of central Luzon moving WNW. The U. S. Army transport *Thomas* and the U. S. Navy transport *Chaumont* are well under the influence of this typhoon in their way from Guam to Manila. Details concerning this typhoon will be given in our article for next month.

The first typhoon of this month of September had formed already on August 27 to 28 over the western Carolines to the south of Guam, near 145° longitude E. and 10° latitude N. It moved first NNW. and almost north until the early morning of the 30th, passing near Guam to the west in the evening of the 29th. The barometric minimum observed there was 740 mm. (29.13 inches) at 7 p. m., a gale blowing from the E. and SE. quadrants.

On the 30th and 31st of August the typhoon moved WNW. and W. by N., but on September 1 it inclined again northward, keeping a NW. and NNW. direction

until the early morning of the 6th, when it recurved northeastward in the northern part of the Eastern Sea. The center of the typhoon traversed the Korea Strait and the southeastern part of Korea during the night of the 6th to 7th, and the Japan Sea on the 7th.

The rate of progress of the typhoon was only of 6 or 6.5 miles per hour from September 1 to 4. The positions of the center at 6 a. m. of these four days were as follows:

September 1, 6 a. m., 18° 30' latitude N., 135° 00' longitude E.  
 September 2, 6 a. m., 20° latitude N., 133° 15' longitude E.  
 September 3, 6 a. m., 21° 50' latitude N., 131° 40' longitude E.  
 September 4, 6 a. m., 23° 35' latitude N., 130° 05' longitude E.

The center passed very close to the north of Naha in the early morning of the 6th, the barometer of that station being as low as 722 mm. (28.43 inches) at 6 a. m. of that day. The steamers *Madras Maru*, *Empress of Russia*, and *President Hayes* were much involved in this typhoon on September 6 in the Korea Strait and in the Eastern Sea.

The second typhoon of September appeared on the 3d to 5th to the NNE. of Guam, near 149° longitude E. and 19° latitude N. It moved WNW. on the 5th and northward after the 5th. It passed near to the east of the Bonins on the 8th and filled up on the 9th not far from 142° longitude E. and 30° latitude N.

The third typhoon was shown by our weather maps on the 10th to 11th between 127° and 128° longitude E., 18° and 19° latitude N. It moved westward on the 12th, and inclined very much to the north on the 13th, at the same time decreasing considerably its rate of progress. The center passed very near to the east of Basco in the morning of the 14th. From the Bashi Channel the typhoon moved NNW. toward the northern part of Formosa increasing again its rate of progress. The steamer *President Pierce* met the typhoon north of Formosa in about 121° longitude E., 26° 30' latitude N., her barometric minimum having been 742.44 mm. (29.23 inches) at 1.30 a. m., with hurricane winds from NW. by N. According to one of the officers of the steamer relative calm was observed for about 20 minutes at the time of the barometric minimum.

The typhoon began to move NE. after traversing the northern part of Formosa, and it inclined still more to the E. on the 17th. At 6 a. m. of the 18th the center was situated south of Japan, in about 133° 20' longitude E. and 31° 40' latitude N. It is impossible with the data at hand to follow the typhoon further.

## TWO SEVERE TYPHOONS OVER THE NORTHERNMOST PART OF THE PHILIPPINES IN JULY, 1925

By Rev. JOSÉ CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

Two well-developed typhoons have visited the Philippines during this month, with an interval between the two of only five days. The first passed over or very close to the Batanes Islands on the 8th, and the second touched the northeastern end of Luzon on the 13th. The second was much more severe than the first, but fortunately it struck only the northeastern end of Luzon in a north-westerly direction, thus averting for the northern part of Luzon a much-feared destruction. Great damage, however, was done by the two typhoons in a good number of provinces through heavy rains and floods.

The first typhoon appeared for the first time in our weather maps on July 3, the center being approximately situated then over the western Carolines near 8° latitude

N., between 142° and 143° longitude E. It moved NW. to the northeast of Yap, until the afternoon of the 4th when it began to incline westward. On the 5th the typhoon was moving W. by N., threatening the northern coast of Luzon; but it inclined again to NW. on the 6th, and even to NNW. on the 7th in the direction of Formosa. The barometric minimum observed in Basco, Batanes Islands, was 737.38 mm. (29.03 ins.) at 6.30 a. m. of the 8th. The U. S. Navy transport *Chaumont* was well under the influence of this typhoon on her trip from Guam to Manila, July 3 to 5.

The steamship *Calcutta Maru*, on her way from Kobe to Iloilo, was also within the body of this typhoon on the 6th to 8th, when near 128° longitude E. and 20° latitude N., the barometer having fallen to 747.51 mm. (29.43 ins.) on the 7th, with a gale blowing from the E., SE., and S.

The typhoon entered China on the 9th between 119° and 120° longitude E., 25° and 26° latitude N.; it recurved northeastward on the 11th to the west and north-west of Shanghai, and traversed Korea, moving ENE. in the early morning of the 12th.

The steamship *President Grant* was somewhat involved in this typhoon between Shanghai and Formosa on her last trip from Shanghai to Manila, July 10 and 11.

The approximate position of the center at 6 a. m. of July 5 to 12 was as follows:

July 5, 6 a. m., 134° 30' Longitude E., 14° 50' Latitude N.  
 July 6, 6 a. m., 129° Longitude E., 16° 30' Latitude N.  
 July 7, 6 a. m., 124° 35' Longitude E., 18° 30' Latitude N.  
 July 8, 6 a. m., 122° 40' Longitude E., 20° 30' Latitude N.  
 July 9, 6 a. m., 120° 05' Longitude E., 24° 30' Latitude N.  
 July 10, 6 a. m., 119° Longitude E., 26° 40' Latitude N.  
 July 11, 6 a. m., 119° Longitude E., 32° 10' Latitude N.  
 July 12, 6 a. m., 127° 35' Longitude E., 37° 45' Latitude N.

The second typhoon made its appearance at 6 a. m. of the 8th, when the preceding one was still over the Philippines. Its center was situated over the western Carolines to the south of Guam about 145° longitude E. and near 10° latitude N. It moved WNW. on the 8th and 9th, but inclined westward on the 10th. The U. S. Army transport *Thomas* was well involved in this typhoon on her way from Guam to Manila; and the motor *Elmbank*, on her voyage from San Pedro to Manila, met the real center of this typhoon in 127° 25' longitude E. and 14° 54' latitude N., her barometer having fallen to 28.12 inches (714.25 millimeters) at 8 p. m. of the 11th, with terrific hurricane winds that backed very quickly from NNE. to W., S. and SSE. Relative calm was observed at 7.15 p. m. As we have only barometric observations taken every hour, the exact minimum, which must have occurred between 7 and 8 p. m., is not known.

In the afternoon of the 11th the typhoon took a north-westerly direction toward the northeastern end of Luzon when it was met by the steamship *Pathfinder* at 4.25 a. m. of the 13th with a barometric minimum as low as 28.05 inches (712.47 millimeters), 5 minutes calm having been observed, broken by an occasional gust at 3.40 a. m. The steamer was anchored at Port San Vicente (122° 09' longitude E., 18° 31' latitude N.). From northeast Luzon the typhoon moved to NNW., its center being situated, at 6 a. m. of the 14th, over the southern part of the Formosa Channel.

The approximate positions of the center at 6 a. m. for the period July 9 to 14 were as follows:

July 9, 6 a. m., 141° 50' longitude E., 11° 30' latitude N.  
 July 10, 6 a. m., 135° 40' longitude E., 13° 30' latitude N.  
 July 11, 6 a. m., 129° 45' longitude E., 14° 25' latitude N.  
 July 12, 6 a. m., 125° 30' longitude E., 15° 45' latitude N.  
 July 13, 6 a. m., 121° 50' longitude E., 18° 50' latitude N.  
 July 14, 6 a. m., 118° 15' longitude E., 23° 20' latitude N.